

REMARKS

Claims 5-8 are now in this application. Claims 1-4 have been canceled.

Claim 5 has been amended to correct the spelling of the word "cam." Claim 7 has been amended to correct the reference numeral indicating the throttle.

Claims 5-8 have been rejected under 35 U.S.C. 102(b) as anticipated by Froment (US 6,189,509). Reconsideration of the rejection is requested.

Claim 5 is directed to a fuel injection system of an internal combustion engine, the system comprising at least one local cam driven pump element per engine cylinder, associated with each injector, of a unit fuel injector or a pump-line-nozzle system for compressing the fuel, a supply line from the pump element supplying fuel to the injector, the injector and/or the supply line to the injector forming a local pressure reservoir chamber, a check valve integrated into the supply line from the pump element to the injector, a control valve located upstream of the cam driven pump element for generating high pressure in the closed state of the control valve during the cam stroke, and a throttle for controlling the pressure decrease of a nozzle chamber of the injector.

The examiner finds that Froment teaches a fuel injection system of an internal combustion engine, the system comprising at least one local cam driven pump element per engine cylinder, associated with each injector. This finding of the examiner is erroneous.

Froment's invention is related to so-called common-rail injection devices. See, col. 1, ll. 64, 65. As is well known in the art, a common-rail injection device typically has a single, high-pressure pump supplying high-pressure fuel to a centralized storage container (the common-rail)

from which the fuel stored at high pressure is supplied to a number of fuel injectors, usually one injector per cylinder. In a typical four-cylinder Diesel engine, the engine will have four injectors supplied by one central common rail and one high-pressure pump. This is the type of system described by Froment.

In contrast, applicant's fuel injection system has a separate pump and a local pressure reservoir for each cylinder. This arrangement has the advantages set in paras. [0009] and [0010] of applicant's specification, which advantages cannot be realized by the system disclosed in Froment.

Further, the examiner's attention is directed to the fact that claim 5 specifically requires a CAM driven pump element. There is no teaching in Froment that the pump element of pulsating pump 3 is driven by a cam.

Claim 5 also requires "a control valve located upstream of the cam driven pump element for generating high pressure in the closed state of the control valve during the cam stroke." Looking at applicant's Fig. 1, control valve 8 is located in supply line 7 between lower pressure pump 4 and the pump chamber of pump element 1, which pump element is driven by a cam fixed on a camshaft. When the cam depresses the pump element to compress the fuel in the pump chamber, the control valve is closed. See, applicant's specification, para. [0022]. There is no teaching in Froment of a control valve located upstream of the pulsating pump 3.

To support a rejection of a claim under 35 U.S.C. 102(b), it must be shown that each element of the claim is found, either expressly described or under principles of inherency, in a single prior art reference. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ

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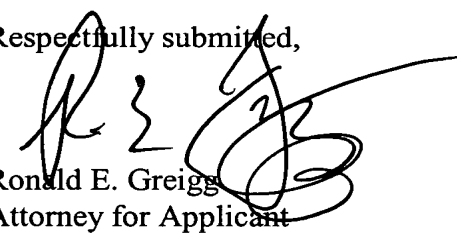
781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

Forment does not teach a fuel injection system of the type recited in claim 5 including at least one local cam driven pump element per engine cylinder, associated with each injector or a control valve located upstream of the cam driven pump element for generating high pressure in the closed state of the control valve during the cam stroke as required by claim 5. Accordingly, claim 5 is not anticipated by the teachings of Froment.

The Commissioner is hereby authorized to charge any necessary fees in connection with this communication to Deposit Account Number 07-2100.

For all the above reasons, entry of the amendment and allowance of the claims are courteously solicited.

Respectfully submitted,



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